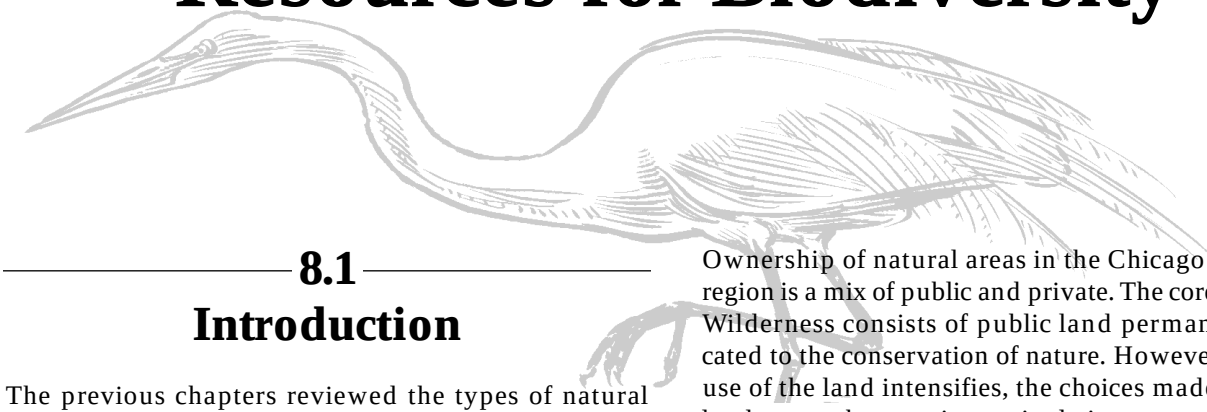
Chapter 8

Preserving Land and Water Resources for Biodiversity



8.1 Introduction

The previous chapters reviewed the types of natural communities found in the Chicago Wilderness area and the goals and actions needed to sustain them. As noted in Chapter 3, the natural areas of the region can be seen as shrinking islands in an increasingly non-natural landscape. To overcome this, two categories of action stand out: 1) enlarging natural areas by protecting the land and 2) managing the land to sustain native ecological communities. This chapter discusses the first of these two actions; Chapter 9 discusses the second.

Before the remaining unprotected natural areas disappear from the Chicago Wilderness region, it is essential that we identify and protect the land that is important to sustaining our natural ecological communities. Acquisition and other protection must be accomplished as soon as possible and must be focused on high-priority sites. Also, natural areas within publicly owned land must be protected from conversion to intensive uses such as golf courses and playing fields.

The landscape is being shaped by market forces, and conservation needs to take account of and function within the economic and regulatory processes. Consumption of land has accelerated faster than population growth, but consumers are showing increasing preference for environmentally sensitive developments with well designed open space and natural areas. And as development covers the remaining open areas of Chicago Wilderness, the public is supporting referenda for acquisition of additional natural areas. Acquisition by entities devoted to conservation is the most direct and certain form of protection and should be strongly supported. But many other methods can help provide protection. The following sections describe these methods.

Ownership of natural areas in the Chicago Wilderness region is a mix of public and private. The core of Chicago Wilderness consists of public land permanently dedicated to the conservation of nature. However, as human use of the land intensifies, the choices made by private landowners become increasingly important. Land management by private owners can strongly affect the course of events in nearby public natural areas. Fortunately, every year more citizens and public officials inquire about techniques for, and become more adept at, preserving open space and restoring habitat.

8.2 Private landowners: initiatives for conservation

8.2.1 Introduction

Private property owners can play a critical role in Chicago Wilderness. Especially important are those who own:

- lands that harbor significant habitat
- critically situated lands with important restoration potential
- lands that adjoin high-quality habitat

Property owners with lands meeting any of these descriptions can make a long-term commitment of all or part of their property to the overall fabric of large-scale ecosystem restoration. The privately owned properties that can play an especially important role in Chicago Wilderness are those that include remnant habitats of good to high quality, those with lesser-quality habitats that could be improved by restoration of missing species, and those on which degraded habitats can be replaced or soil hydrology can be restored.

Typically, the larger the property the better, but also important are clustered, separately owned, smaller sites with cooperative neighbors and also all sites that adjoin or directly affect properties with threatened or endangered species or rich natural communities. In addition, all properties in critical watersheds have a role to play. The critical watersheds are those of very high-priority and high-priority streams, and those of exceptional and important lakes, as defined in Chapter 6. Types of privately owned property most likely to play an important role in Chicago Wilderness are include residential lots three acres and larger, golf courses, corporate campuses, commonly owned open space in planned unit developments, hunt clubs, undeveloped investment properties, and recreational lands owned by individuals and corporations.

Recommendations for private property owners

- ✔ Property owners who believe they own important habitats should have inventories of their land made by the staff of local, state, or federal agencies or by experienced citizens associated with local conservation organizations.
- ✔ Property owners who wish to commit to long-range protection and enhancement of their habitats should first assess the various methods of legal protection (listed in detail below).
- ✔ Property owners who do not wish to encumber or sell their land, but recognize its habitat value, should pursue habitat-enhancement techniques, participate in larger landscape restoration efforts, inspire neighboring property owners, and share information on uncommon species observed on their property.
- ✔ Property owners who have already established a strategy to protect and restore their property should assess potential impacts on their habitat from changes to land use on neighboring properties and, based on that assessment, pursue strategies with neighboring property owners to insure protection and expansion of the habitat resources.
- ✔ Corporate property owners should restore native plant and animal communities on their lands or expand existing restorations wherever possible to expand, link, or enhance nearby habitats. This can provide employee and community benefits and, in some cases, can achieve significant savings on land management.
- ✔ Chicago Wilderness should map and catalog the extent of private properties in the region that could play an important role in broader ecosystem restoration efforts.
- ✔ Chicago Wilderness should establish a process whereby private property owners can become effective participants in broader efforts to restore ecosystems.

Conservation strategies available to private property owners are described in the remainder of section 8.2.

8.2.2 Conservation easements

Illinois statutes allow private property owners to donate conservation easements to governmental bodies or not-for-profit conservation organizations certified as 501c3 by the IRS. The property owner retains title to the property, but the easement is granted in perpetuity, to protect the natural resources from major changes in land use, such as the building of structures, removal of native flora or fauna, grading or disruption of soils, or similar restrictions specific to each property. The management of the property to enhance natural resource values, or the role it would play in a larger ecosystem restoration, is normally spelled out in a separate management agreement, which can be amended periodically to respond to changing conditions.

Approximately 2000 acres of land have had conservation easements applied by private property owners. The key not-for-profit organizations who hold conservation easements include: Corlands (1400 acres), the Conservation Foundation of Du Page County (200 acres), the Land Foundation of McHenry County (150 acres), Lake Forest Open Lands 300 acres, plus 220 acres in easements 170 acres managed for others under lease agreements.), and the Fox Valley Land Foundation (50 acres). Examples include the Weers easement in McHenry County, the Merit Club in Lake County, the Shaw easement in Kane County, and the Barbara and Allan Wilson easement in Lake in the Hills.

8.2.3 Illinois Nature Preserves

Illinois Nature Preserves can be established on properties that hold threatened or endangered species or especially high-quality habitats. Sixteen privately owned Illinois Nature Preserves have been established in the Chicago Wilderness area. They constitute some of the richest concentrations of biodiversity that have survived since presettlement times. Examples include the Parker Fen in McHenry County and the Bystricky Prairie in McHenry County.

However, the integrity of Nature Preserves can still be compromised by impacts from surrounding land uses. Thus, continuing efforts are needed to expand and buffer these preserves, as well as to link them to a broader restored landscape. Buffer zones can be established with any of the other mechanisms described in section 8.2.

8.2.4 Illinois Land and Water Reserve

Illinois Land and Water Reserves are registered with the Illinois Nature Preserves Commission and are high-quality habitats or restorations, often serving as a buffer to a nearby or adjoining Illinois Nature Preserve. Examples include the Brooklands Wood Reserve in Antioch Township, Lake County; and the Webber Reserve in Antioch Township, Lake County.

8.2.5 Transfer to restricted trust

A property owner may establish a limited trust that owns the property and has trustees who operate the trust with specific instructions to preserve and manage the trust. The trust can take ownership during the owner's lifetime, allowing the owner to continue residence on the property, or it can come into existence upon the death of the owner. Such a trust needs to be funded in perpetuity in order to pay taxes, insurance, normal maintenance, and natural-area management. This is not a common method of land preservation because of the commitment needed from the trustees, but it is a possible strategy in certain situations.

8.2.6 Commitments, less than perpetuity

The vast majority of property owners in the Chicago Wilderness area who maintain their lands in a natural condition have not made long-term, legally binding commitments to restrict changes or development of their property, nor have they participated in coordinated efforts to restore habitat within their local watershed or their neighborhood. Yet thousands of private property owners actively enhance or restore their lands for habitat purposes because of a personal commitment.

Because of the positive news reports of native landscape restoration, as well as the educational initiatives of environmental advocacy groups and individuals, more property owners every year are attempting to restore communities of associated native flora and fauna (prairie, woodland, wetlands) or to enhance habitat for individual species (butterfly gardens, bluebird boxes, bat boxes). Their level of success in establishing optimum biological integrity depends wholly on the quality of information and advice they receive.

Many of these properties can perform very important roles within the Chicago Wilderness because of their location within large potential bioreserves. These properties also are the primary source from which future conservation easements, Illinois Nature Preserves, and Land and Water Reserves will be drawn. Because of their growing and dispersed nature, an important task for Chicago Wilderness members will be to catalog their extent, to determine their roles in larger preservation and restoration efforts, and to establish a process through which property owners can participate in the overall effort. Examples include the Abbott Laboratories prairie restoration and native orchid habitat protection in North Chicago, the Perle Olsson prairie and woodland restoration in Ringwood, and the Joan and John Knoll prairie restoration in Bull Valley.

8.2.7 Landscape restoration to serve a corporate purpose

An increasing number of corporations are using native landscape restoration to minimize groundskeeping costs, to provide areas of interest for employees, and to achieve good public relations with a conservation-minded local community. In most cases, these restorations have no underlying long-term commitment, but nonetheless they open up such a possibility. These restorations can play a strategic role in protecting on-site habitat, buffering or linking nearby habitats, or increasing storm-water absorption. As one example, Commonwealth Edison has seeded prairie plants into its rights of way in Cary, Orland Park, Zion, Mokena, and the south side of Chicago. As another example, Modine Corporation has seeded prairie plants on its property in Ringwood. For discussion of natural landscaping, see section 11.3.2 and Appendix 9.

8.2.8 Transfer of private property to public ownership or to conservation organizations

Property owners who wish to preserve their lands for habitat protection and public use have various options for transferring their property to a public land-holding body or to a not-for-profit conservation organization in the region. Each of these agencies operates under financial limitations as well as a strategic acquisition plan or set of criteria for purchases or acquisitions. In certain cases, property owners may find no agency willing to purchase property or to accept a donation. This is a region-wide issue that needs to be resolved. One source of information on local public agencies and land trusts is the OpenLands Project.

Donation by property owner

Outright donation: Full title and ownership of property is donated to a conservation agency. Income tax deductions are usually available for this charitable donation.

Donation by devise: A gift of land to a conservation agency is accomplished through a will, expressly stating that, if accepted, the land will be used for conservation purposes and not sold or developed. An income tax deduction is not received, but estate taxes may be substantially reduced.

Donation with reserved life estate: Land is donated to a conservation agency, but with a provision that the donor retains a right to live on it or otherwise use it. The charitable contribution is computed based on the fair market value of the donation minus the value of the life interest in the property as determined using IRS actuarial tables.

Sale by property owner

Sale at fair market value: A conservation agency pays the fair and reasonable appraised value for property if it falls within its strategic acquisition area, and if the agency has the funds to make such a purchase. The seller is liable for income tax on the capital gain.

Bargain sale: The seller sells the land for less than the appraised market value and gains a charitable IRS deduction, thus avoiding some or all of the capital-gains tax.

Installment sale: A portion of the land is sold yearly rather than all of it at one time, lessening the capital-gains tax.

Sale with reserved life estate: Property is sold to a conservation agency while the seller retains the right to live on the property for all or a portion of his or her lifetime. This mechanism can provide the means to meet both the needs of the seller and the long-term objectives of the buyer.

Lease-back: Property is sold with a pre-established right of the seller to retain its use through a lease for an agreed-upon period of time. It is similar to a life estate in meeting the needs of the seller while satisfying the objectives of the buyer.

Right of first refusal: A conservation agency is usually negotiating with several property owners at any given time, and its yearly budget may not allow it to purchase all potential properties on the market. Or the agency may not offer a seller as much as the seller wishes to receive. In these situations, a conservation-minded property owner can assign a right of refusal to the conservation agency. This guarantees the agency the right to match a price offered by another potential purchaser.

Recommended actions for Chicago Wilderness member organizations to facilitate transfer of private property

- ✔ Educate the land-owning public about the options and incentives available for transferring open space to public and not-for-profit conservation agencies.
- ✔ Assure that all areas within the Chicago Wilderness region are served by one or more organizations that will take title to important habitats in order to manage them.
- ✔ Look for funding mechanisms so that lack of resources for ongoing ecological management is no longer an impediment to the donation of important habitat.

8.3

Local governments: plans, ordinances, contracts, and strategies

Local governments already have the framework for preserving and restoring habitat in their codes. In most cases, standards for protecting and restoring habitat may need to be added, but rarely do new approaches need to be created. However, a well-implemented policy for preservation and restoration of habitat by a local government will include evaluating and amending all plans, ordinances, contracts, codes, and strategies and making amendments where needed.

Recommendations for local governments

- ✔ Encourage local citizens to offer ideas for habitat preservation and restoration in community visioning exercises.
- ✔ Identify lands with high habitat value and lands with good restoration potential and designate them as natural-resource preserves in comprehensive plans.
- ✔ Designate lands with high habitat value or good restoration potential as natural resource preserves when carrying out strategic and special-area plans.
- ✔ Designate stream corridors, swales, and hydric-soil networks as open-space links in comprehensive plans and in strategic and special-area plans.
- ✔ Develop five-year capital improvement programs for storm-water management that minimize infrastructure investment, replacement, and maintenance by using best management practices that:

- Use natural swales
- Open storm sewers to daylight by modifying them to open swales
- Encourage infiltration with perforated pipe
- Adopt zero-discharge standards when appropriate
- Plant deep-rooted native vegetation on the banks of streams and detention ponds to control erosion
- Use other best management practices such as those identified by NIPC (1993)

✔ Develop five-year capital improvement programs for sewage treatment that minimize infrastructure investment, replacement and maintenance costs by using best management practices that:

- Use land-treatment systems
- Use restored wetlands as absorption fields
- Use polishing ponds as open-water wetlands
- Use other best management practices such as those identified by NIPC (1992)

✔ Develop general-purpose capital improvement programs that minimize infrastructure investment, replacement, and maintenance using best management practices that:

- Use native plants to landscape rights of way
- Encourage storm-water infiltration with perforated pipe
- Make road surfaces as narrow as possible
- Avoid seeps, springs, and organic soils when locating new roads and facilities

✔ Adopt zoning ordinances that incorporate natural-resource overlay zoning districts and hydric-soil overlay districts, which supplement other zoning requirements that apply to specific areas. Adopt zoning ordinances that require developers to protect and restore natural resources, to provide buffers for wetlands and streams, to minimize impervious surfaces, and to cluster home sites.

✔ Adopt subdivision regulations that require:

- Inventory of natural habitats, designation of hydric soils, and location of underground tiles at the sketch-plan stage
- Design of detention areas to achieve or approach zero discharge for two-year storms
- Preservation of habitats and hydric soil systems
- Buffers for wetlands, streams, and drainage corridors
- Designation of lands with conservation easements or dedication to local government at the preliminary planning stage.

✔ Use engineering standards and practices that incorporate measures to protect and restore natural resources, that emphasize infiltration over discharge of storm water, and that are flexible enough to respond to varying environmental situations.

✔ Insure the municipal code allows and encourages the restoration of natural plant communities and habitats for native wildlife in residential and commercial landscaping.

✔ Creatively design annexation and development agreements to protect and restore natural resources to the highest possible degree, including immediate identification and protection of major resources and a process for identification and protection of other resources in later stages

✔ Use TIF districts to acquire or restore natural habitats and community open space as part of redevelopment, to provide habitat and implement hydrological best management practices such as those recommended by municipal consultants and by NIPC (1992).

✔ Adopt intergovernmental agreements between or among neighboring communities to coordinate protection and restoration of natural resources and of hydrology.

✔ Undertake municipal conference initiatives that focus on the protection and restoration of natural resources, the identification of local ecosystems, and the modification of storm-water systems as described above in this section.

8.3.1 Examples of public and private initiatives for open space and habitat

Parkland dedication: Nunda Township accepted title to 30 acres of drained hydric soils from the developer of adjoining land. The township converted a portion to a prairie restoration, created several soccer fields, and left the remainder as passive open space.

Watercourse dedication: The Kane County Forest Preserve District obtained title to Otter Creek and adjoining wetlands from the developer of the Thornwood development in South Elgin.

Greenway dedication: The Kane County Forest Preserve District obtained a broad greenway through the Mill Creek development, which includes Mill Creek and adjoining wetlands and uplands.

Road corridor dedication: Most roads in the Village of Long Grove include habitat easements that are dedicated as part of the process of reviewing development plans.

Wetland dedication: The Valley Hill Estates developer in the Village of Bull Valley established a conservation easement on the Boone Creek Fen, an Illinois Natural Area Inventory site, and an adjoining oak ridge that acts as a buffer.

Habitat dedication: Due to planned-development agreement, annexation agreement, or other development agreement, 120 acres of a 191-acre, 74-lot development were preserved as open space and for habitat restoration through an agreement among seven different parties, including the Lake Forest Open Lands Association, Lake County Forest Preserve, and City of Lake Forest.

Cooperation between government units to protect habitat: The Village of Inverness postponed consideration of an annexation proposal for 90 days to allow the Cook County Forest Preserve District to purchase a five-acre buffer to the Baker's Lake Nature Preserve.

Open space associated with sewage treatment for buffering effluent: The Northgate development in Huntley will use a land-treatment system that pipes treated effluent to dedicated open space. This avoids discharge from a sewage-treatment plant into the Class-A-rated Kishwaukee River system, while also providing expanded habitat for the upland sandpiper in a portion of the treatment area.

Habitat as part of common private ownership of open space: The 667-acre Prairie Crossing development in Grayslake retains 463 acres of open space, including 160 acres of restored wetlands, restored prairie, fields, meadows, and parks. The development is designed to have zero discharge for two-year storms.

Habitat associated with golf courses: The Ruffled Feathers Golf Course in Lemont incorporates 29 acres of restored wetlands and uses the design principles advocated by Audubon International for habitat protection. The Village of Lakewood purchased a bankrupt 18-hole golf course in 1992; learned that it included a 36-acre, high-quality fen, and dedicated it in 1995 as the Kishwaukee Fen Illinois Nature Preserve.

Restoration projects funded with fines from regulatory enforcement actions or mitigation agreements: The Oak Lawn Park District recreated meanders for three quarters of a mile of Stoney Creek into a broader floodway, restored riparian native vegetation, and established a public greenway and trail in place of a deeply incised, overgrown stream channel with little public access. Fifty species of birds, fish, and other fauna have rediscovered the area. See box for case study from Northwest Indiana.

1.3.2 Regulation

Short of purchasing or leasing a piece of land or acquiring some of the rights that constitute land ownership, governments at all levels have various rights to regulate the development or use of land. This authority is most commonly delegated by state governments to counties and municipalities, whose zoning regulations are the principal local tool for regulating the use of land. Zoning ordinances often require specified amounts of permanent open space, typically in the form of lot-size requirements, setback requirements, or maximums for a building's site coverage. These ordinances can be applied to preserve small natural areas.

Counties and municipalities may also regulate development to prevent specific environmental impacts. For example, many of the local governments throughout the Illinois portion of Chicago Wilderness have adopted model local ordinances for stream and wetland protection, erosion and sedimentation control, and storm-water drainage and detention, or they have developed and adopted their own codes.

Regulations affecting the development of flood plains may aid in the preservation of natural communities. However, these regulations usually do not preclude development unless it diminishes flood storage capacity or exposes structures to flood damage. Thus without added specific habitat protection regulations, flood plain ordinances alone are insufficient.

State and federal rules also apply to development affecting wetlands. Permits to dredge or fill wetlands are subject to the approval of the U.S. Army Corps of Engineers and state agencies. The permit can be obtained only if appropriate mitigation measures are taken. For high-quality wetlands, mitigation may not be permitted. Often, developers search for an entity to which they might donate wetlands as permanent open space. This search is often frustrated by a lack of local conservation management organizations or their inability to take on the management of small or fragmented wetlands unless adequate long-term funding is provided.

Development projects using federal dollars may be subject to an environmental impact statement (EIS). An EIS is only advisory but has, in some instances, provided the impetus for compromises or adjustments to the design of a project for the benefit of natural-area preservation. Projects that pose a hazard to threatened or endangered species can be challenged under both federal and state law.

Conservation and Restoration of Karner Blue Butterfly Habitat

A Case Study at National Steel Corporation's Midwest Division in Portage, Indiana

In July of 1992, National Steel Corporation, Midwest Division (Midwest Division) applied to the United States Environmental Protection Agency (U.S. EPA) and Indiana Department of Energy Management (IDEM) for a Class 3 Resource Conservation and Recovery Act (RCRA) permit modification to expand the existing Greenbelt Hazardous Waste Landfill currently in operation on its property in Portage, Indiana. As part of permitting requirements, U.S. EPA and the United States Fish and Wildlife Service (U.S. F&WS) conducted several site visits to determine whether the landfill expansion would negatively impact any state or federal, proposed/listed threatened or endangered species.

During a U.S. EPA site visit to the project area (known as "Greenbelt II") in 1992, lupine plants were discovered growing in the area to be impacted. This plant serves as the sole larval host for the Karner blue butterfly, which was known to occur nearby in the Indiana Dunes National Lakeshore. On a subsequent visit with personnel from the Indiana Department of Natural Resources, one adult male Karner blue butterfly was observed at the impact site. Due to rapid population declines over the past 15 years, this butterfly species is listed as federally endangered under the Endangered Species Act.

All permits issued under RCRA must be in compliance with other federal laws, including the Endangered Species Act. As part of this requirement, U.S. EPA must consult with U.S. F&WS if any actions under its jurisdiction have potential to impact any proposed/listed threatened or endangered species. Because a Karner blue butterfly population occurred in the impact area, U.S. F&WS required that U.S. EPA provide a Biological Assessment to determine if the proposed landfill expansion would adversely affect the Karner blue butterfly or its habitat. Midwest Division prepared the Biological Assessment and provided it to U.S. EPA and U.S. F&WS for review

From data gathered during the Biological Assessment, it was determined that approximately 17 acres of moderately suitable habitat for the Karner blue butterfly would be impacted by the 30 acre expansion of the existing Greenbelt landfill and clean-up of the Eastside Solid Waste Management Unit (Eastside SWMU). Pursuant to the Endangered Species Act, the U.S. F&WS prepared a Biological Opinion and Incidental Take Statement, outlining the expected damages to the Karner blue butterfly and measures for mitigating these disturbances. An unused portion of Midwest Division's property (known as the Conservation Area) was selected as the mitigation site because of the presence of relatively undisturbed oak savanna habitat, lupine, and a variety of Karner blue butterfly nectar sources. The Conservation Area totaled 45 acres in size, of which approximately 25 acres was relatively undisturbed oak savanna with a dense understory of young black oak, sassafras and cherry trees. The remaining 20 acres consisted of old agricultural fields, black locust thickets, and areas recovering from previous sand mining operations.

Part of mitigation for the loss of habitat required by the Greenbelt expansion permit included translocating lupine plants from the Greenbelt II site to the Conservation Area. It was thought that any over-wintering Karner blue butterfly eggs would also be translocated with the lupine plants. In March and April of 1993, 759 plugs of soil containing 1,610 lupine plants were moved from the Greenbelt II landfill expansion site to the Conservation Area. Each of the soil plugs containing lupine was placed in one of 13 "Lupine Translocation Areas" located on the edges of the wooded portions of the Conservation Area. Each lupine plant was marked with a metal tag and a colored pin flag. In May and June of 1993, 7,987 additional lupine seeds and 2,063 lupine seedlings were planted on the translocated plugs. This was done to ensure that Karner blue butterfly larvae occurring there would have sufficient food sources. In addition to the translocated lupine, seeds and seedlings, dense native populations of lupine (over 30,000 plants) already occurred throughout the Conservation Area.

(Continued on next page.)

Following lupine translocation, Midwest Division was required to conduct habitat restoration activities at the Conservation Area. The Karner blue butterfly requires a mosaic of open to partially closed canopy oak savanna with a ground cover dominated by lupine (the only known foodplant for the larvae of this species), grasses and adult nectar sources. Lupine and many of the adult nectar sources are dependent on fire for their continued survival. Fire suppression over the past 20-30 years had resulted in the growth of a dense understory of young trees at the Conservation Area. These trees shaded out the herbaceous layer, making much of the area unsuitable as Karner blue butterfly habitat. Over 35,000 young trees and shrubs were removed manually in the winters of 1993 and 1994. In addition, more than 9,000 black locust trees and saplings were cut and treated with herbicide.

Midwest Division was also required to implement biological monitoring programs to track shifts in various habitat characteristics following restoration. They were also required to monitor the survivorship of translocated lupine and any Karner blue butterflies that may have been moved to the Conservation Area. Over 65 percent of the translocated lupine plants had survived as of 1997 and 75 percent of the plugs had at least one lupine plant present. Initial butterfly surveys in the spring of 1993 found that no Karner blue butterflies were translocated to the Conservation Area. However, these surveys did identify a previously unknown population of the butterfly already occurring at the Conservation Area. Between 1993 and 1997, this population steadily increased in size from approximately 160 individuals to more than 1,000. In 1998, the Conservation Area was deeded to the Indiana Dunes National Lakeshore (IDNLS) for inclusion in their West Beach Subunit.

In addition to the Conservation Area, Midwest Division also purchased a privately-owned, 50 acre parcel of land along Stagecoach Road and adjacent to the Inland Marsh Subunit of IDNLS. This parcel of land is known to contain a viable Karner blue butterfly population and numerous plant species considered very rare in the greater Chicago region.

In the area of wastewater management in Illinois, the Environmental Protection Agency has authority to set boundaries for systems that collect and treat wastewater. A natural area lying outside any designated service area thus enjoys a limited form of protection from development that would normally require sewers. The Illinois Environmental Protection Agency has been reluctant to limit the expansion of wastewater service areas upon request, even if the expansion would expose high-quality streams to discharges of treated wastewater. It is recommended that the Illinois EPA establish a process for reviewing and approving the expansion of wastewater service areas that takes into consideration the impacts on the total natural environment within affected watersheds.

One of the best tools available to local governments for protecting natural areas is their power to prepare and adopt comprehensive plans. While such plans carry only advisory authority, they can set the stage for action to protect important areas long before development could cause harm or destruction.

A more specialized type of plan that has proven beneficial for preserving natural areas is one specifically addressing future needs and opportunities for parks, open spaces, and greenways. The forest preserve and conservation districts in Illinois, the Illinois Department of Natural Resources, and a growing number of park districts and townships have adopted plans that identify key areas to be protected.

An increasing number of local governments and organizations have been actively planning and implementing greenways (generally defined as open space corridors with multi-functional values). Many greenways are based on river and stream corridors and on abandoned rail lines, which often encompass one or more natural communities. The Northeastern Illinois Planning Commission and the OpenLands Project have jointly sponsored a Regional Greenways Plan for the six Illinois counties in the Chicago Wilderness region.

8.3.3 Watershed planning and management

Recent attention has been focused on the unfulfilled potential of comprehensive watershed planning, involving multiple government units and addressing all aspects of managing water resources. This concept brings together the various aspects of water management, which have heretofore been planned separately, if at all. Watershed management includes regional management of storm water, of flood plains, of water supply, and of water quality, covering both non-point-source and point-source water pollution.

This more comprehensive approach to planning has arisen because many of the costly flood control projects of past years not only have failed to bring relief from flooding but also have often resulted in severe environmental degradation. By the same token, water-quality management planning has tended to focus solely on wastewater collection and treatment and has typically failed to achieve the original national purpose of attaining streams, lakes, and rivers fit for swimming and fishing. Examples of integrating various aspects of water management are evolving in several parts of the region, most notably where countywide agencies have played a lead role in organizing storm-water planning.

8.3.4 Best management practices for new urban and suburban development

NIPC (1992) gives a survey of best management practices for the process of urban and suburban development is contained in the NIPC publication. Among the topics covered are site planning and design, soil erosion and sediment control, storm-water drainage and detention, and the protection of water bodies and wetlands. Each of these topics is directly related to the preservation of the region's biodiversity. Further information can be obtained from the Center for Watershed Management, located in Silver Spring, Maryland.